

# **Annual Performance Report**

Third Year – September 2004 – September 2005

## **Multi-Emission Cooperative Agreement MECA**

We Energies  
December 2005

## Table of Contents

	<u>page</u>
Summary	3
Introduction	5
Goals and Objectives	6
Performance Evaluation	6
Environmental Management Systems	7
Research	9
Emissions	11
Wisconsin Voluntary Emission Reductions Registry	14
Regulatory Flexibility	14
Outreach and Stakeholder Participation	14
Administrative Savings	17
Data Appendix	18

## SUMMARY

This is the third annual performance report prepared as part of We Energies' commitments within the Multi-Emission Cooperative Agreement (MECA) signed by the company and the Wisconsin Department of Natural Resources (DNR) on September 30, 2002.<sup>1</sup>

We Energies and the DNR identified several specific objectives during development of the MECA. The following summarizes progress to date.

Objective	Progress
Provide We Energies an integrated, multi-emission air quality strategy for the company's coal-burning power plants	<p>During the past year, the company continued applying an integrated air quality strategy with several actions:</p> <ul style="list-style-type: none"> <li>Continuing construction in repowering the Port Washington Power Plant. This new natural gas fueled combined-cycle turbine plant is projected to begin full commercial operation in 2008.</li> <li>Continuing full operation during the summer ozone season of Wisconsin's first selective catalytic reactor (SCR) at the Pleasant Prairie Power Plant (P4) to reduce nitrogen oxide emissions.</li> <li>Continuing use of computerized combustion controls at the Oak Creek and Valley Power Plants to reduce nitrogen oxide emissions.</li> <li>Continuing to fund and participate in applied research and demonstration projects in controlling mercury emissions.</li> </ul>
Provide increasing planning certainty for a fixed timeframe and anticipating future emission targets	<p>The company continued air quality improvement projects at the covered plants with the goal of meeting the targets outlined in the MECA. The most significant activity was the continued construction \$325 million construction project involving a second SCR and the addition of two flue gas desulfurization (FGD) units at the Pleasant Prairie Power Plant. Initial operation of the first of these FGD systems is scheduled for the 4<sup>th</sup> quarter of 2006.</p>
Communicate and invite input from interested persons	<p>We Energies continued to provide information and evaluate input from interested parties in the areas surrounding the Pleasant Prairie, Oak Creek, Valley and Milwaukee County Power Plants. This included group tours, presentations, meetings and distribution of informational material.</p>

<sup>1</sup> In addition to this performance report prepared as part of We Energies commitments within the Multi-Emission Cooperative Agreement, Wisconsin Energy Corporation publishes a comprehensive corporate performance report following the Global Reporting Initiative (GRI) sustainability reporting guidelines. The most recently published corporate performance report covers the period through 2004 and can be viewed or downloaded on the internet at [WEC Performance Report](#). Additional information concerning the GRI guidelines can be found at [Global Reporting Initiative](#).

Optimize emission controls for multiple reduction objectives

The company continued to utilize equipment and conducted testing to evaluate various approaches for optimizing existing and potential future emission control systems. This included continued testing involving the SCR at Pleasant Prairie Power Plant, and on-going performance monitoring of the combined low NOx (nitrogen oxides) burners and the neural net control systems at the Valley and Oak Creek Power Plants.

Invest funds and resources in air quality improvement, and more efficiently manage and recover environmental costs

Operation of the SCR at Pleasant Prairie Power Plant prompted continued evaluation of its effect on both air quality and the plant maintaining 100 percent utilization of coal combustion products (CCP) for commercial uses. Beneficial utilization of the plant's CCPs avoids the costs of landfilling this material, and sale of this commercial product offsets other production costs.

Provide flexibility with regard to permit streamlining, streamlined reporting and decreased administrative expenses, alternative monitoring and enhanced corrective action

We Energies maintained a reduced testing schedule at its combustion turbines (as allowed by the MECA) by being able to calibrate certain equipment on a biennial schedule rather than on an annual schedule. This reduced both testing and administrative expenses. The permit streamlining provision was not utilized during the reporting year.

Examine performance with respect to applicable laws and regulations

We Energies continued annual performance evaluations, including an audit of regulatory compliance, at all of the facilities covered by the MECA. Results of each facility evaluation were submitted to the DNR within 45 days of completing the audit reports.

Implement a formal environmental management system

The company maintained environmental management systems (EMS) in accordance with the MECA, with individual plant teams leveraging on the continual improvements implemented at other plants covered by the Agreement. These systems supported both regulatory and business unit goals.

Continue to perform research to support future reductions of mercury and greenhouse gases

We Energies continued to support specialized studies of mercury control technologies at its facilities and by the Electric Power Research Institute (EPRI). We Energies supported research on carbon sequestration, as well as supporting initiatives involving forest sequestration projects.

We Energies continues to implement the voluntary commitments of the MECA. Feedback from interested parties is welcome. Additional information about this report and the MECA may be obtained from Kris McKinney at (414) 221-2157 or [kris.mckinney@we-energies.com](mailto:kris.mckinney@we-energies.com), or Brian Borofka at (414) 221-4872, [brian.borofka@we-energies.com](mailto:brian.borofka@we-energies.com).

## INTRODUCTION

Wisconsin Electric Power Company (conducting business as We Energies) signed a voluntary Multi-Emission Cooperative Agreement (MECA) with the Wisconsin Department of Natural Resources (DNR) on September 30, 2002. This is a five year agreement and may be renewed for an additional five years.

The MECA seeks to provide an integrated, multi-emission air quality strategy for the company's coal-burning power plants in Wisconsin. Facilities covered by the agreement include five coal-burning plants and three natural gas and oil fueled combustion turbine facilities. These facilities are listed below.

Plant	Size and Primary Fuel
Pleasant Prairie Power Plant <sup>2</sup>	1210 megawatts (MW) – coal
Oak Creek Power Plant	1157 MW – coal
Port Washington Power Plant	Retired <sup>3</sup>
Valley Power Plant	280 MW – coal
Milwaukee County Power Plant	11 MW – coal
Germantown Power Plant	348 MW – oil and natural gas
Concord Generating Station	367 MW – natural gas
Paris Generating Station	367 MW – natural gas

Note: Germantown Power Plant consists of 250 MW #2 fuel oil, and 98 MW natural gas.

The MECA includes a commitment by We Energies to submit an annual performance report to the DNR and interested members of the public within 90 days after the completion of each year of the agreement. Specific items to be addressed in the performance report shall include the following as outlined in Section XIII and other parts of the Agreement.

### Content of the Annual Performance Report

- Actual annual emissions of SO<sub>2</sub>, NO<sub>x</sub>, mercury and CO<sub>2</sub> for each power plant covered under the agreement
- Actual seasonal emissions of NO<sub>x</sub> during the summer ozone season
- Information concerning the status of any research projects to study greenhouse gas or mercury emission reductions and the status of these reductions
- Information on any emission reductions registered with the early credit registry
- A summary of process changes under the General Construction Permit Exemption procedures
- Goals and objectives the previous year, and areas of success and improvement
- An evaluation of the EMS implemented under the agreement

This is the third annual performance report prepared as part of the MECA.

---

<sup>2</sup> Additional information about We Energies' power plants can be found at [We Energies About Us](#).

<sup>3</sup> The coal-fueled generation facilities at Port Washington Power Plant were permanently decommissioned on September 17, 2004. This new plant (the Port Washington Generating Station, or PWGS) is being repowered with combined cycle gas turbines fueled by natural gas, and will enter full commercial operation in 2008. This commercial operation date will also mark the initiation of commitments for PWGS that are included in the Multi-Emission Cooperative Agreement.

## GOALS AND OBJECTIVES

The MECA has several specific goals and objectives. These are defined in Section I and other parts of the agreement and include:

- Provide We Energies an integrated, multi-emission air quality strategy for the company's coal-burning power plants
- Provide increased planning certainty for a fixed timeframe and anticipating future emission targets
- Identify quantifiable targets for reducing key emissions, including nitrogen oxides, sulfur dioxide and mercury
- Communicate performance information and invite input from interested persons
- Optimize emission controls for multiple reduction objectives
- Invest funds and resources in air quality improvements, and more efficiently manage and recover environmental costs
- Provide flexibility with regard to permit streamlining, streamlined reporting and decreased administrative expenses, alternative monitoring and enhanced corrective action
- Examine performance with respect to applicable laws and regulations
- Maintain an environmental management system
- Continue to perform research to support future reductions of mercury and greenhouse gases.

## PERFORMANCE EVALUATION

Section XIII of the MECA requires that We Energies perform and report to the DNR the results of a baseline performance evaluation. This is defined in section II.G of the agreement as:

"A systematic, documented and objective review, conducted by or on behalf of the owner or operator of a facility, of the environmental performance of the facility, including an evaluation of compliance with the cooperative agreement and the provisions of Chapters 280 to 295 Wis. Stats. and rules promulgated under those chapters for which a variance is not granted under section 299.80(4) Wis. Stats."

Performance evaluations were conducted at each of the plants and the results reported to the DNR. All subsequent corrective and preventive actions were completed within 90 days, and the status of each action item and its completion date was reported to the DNR. The following table lists the dates of completion of each on-site evaluation.

<b>Plant</b>	<b>Date Evaluation Completed</b>
Pleasant Prairie Power Plant <sup>4</sup>	November 11, 2005
Oak Creek Power Plant	September 23, 2005
Port Washington Power Plant	Plant retired in 2004 <sup>5</sup>
Valley Power Plant	June 24, 2005
Milwaukee County Power Plant	October 13, 2005

<sup>4</sup> Pleasant Prairie Power Plant also has its own Environmental Cooperative Agreement signed in February 2001. The Pleasant Prairie Agreement expires in 2006, and We Energies has applied for a five-year renewal of the Pleasant Prairie Agreement.

<sup>5</sup> The last operating unit of the Port Washington Power Plant was retired in the fall of 2004. Consequently, no performance evaluation was performed during 2005.

Germantown Power Plant	November 2, 2005
Concord Generating Station	April 22, 2005
Paris Generating Station	May 6, 2005

The evaluations were conducted by We Energies' compliance management staff. This compliance group is independent of the business unit that operates the plants and reports directly to the Vice President-Environmental for Wisconsin Energy Corporation. The reviews were conducted following the procedures outlined in the ASTM Standard E2107-00 (Standard Practice for Environmental Regulatory Compliance Audits). The ASTM standard addresses facility and auditor responsibilities, auditor qualifications, audit processes, records management and audit report preparation. Each evaluation was comprised of interviews, records reviews and physical inspections of each facility.

Due to the size and complexity of each generating facility and the multi-media nature of each evaluation, separate evaluations were conducted and reported for each facility per the schedules listed above. This allowed a focused evaluation, and subsequent continual improvements, at each facility. Additionally, the evaluation reports were provided to the DNR separate from the present report for the same reasons. The facility-specific evaluation reports focused on compliance, while the present report examines the overall performance of all the MECA facilities in terms of key emission factors and progress in achieving the goals of the MECA. The DNR has approved of this approach.

## ENVIRONMENTAL MANAGEMENT SYSTEMS

We Energies committed to continued implementation of ISO 14001-based environmental management systems (EMS) as part of the MECA. As outlined in Section VIII of the MECA, the company was scheduled to adopt an EMS at all existing plants within two years of signing the agreement, or September 30, 2004. This has occurred. The Port Washington Power Plant, which is in the midst of a repowering project, will have an EMS implemented within one year of the new plant being in full commercial operation.

<b>Principle EMS Components</b>
Environmental Policy
Environmental Planning
Environmental Aspects
Legal and Other Requirements
Objectives and Targets
Environmental Management Programs
Implementation and Operation
Structure and Responsibility
Training and Awareness
Communication
EMS Documentation
Document Control
Operational Control
Emergency Preparedness and Response
Checking and Corrective Action
Monitoring and Measurement
Nonconformance and Corrective and Preventive Action
Records
EMS Audit
Management Review

We Energies had previously committed to implementing an EMS at the Pleasant Prairie Power Plant (P4) under the Pleasant Prairie Environmental Cooperative Agreement signed in February 2001.

Specific highlights of the EMS activity during the third year of the MECA include the following.

<b>EMS Activity</b>	
Training	<p>An updated environmental refresher training course was introduced to the plants in 2005. Targeted and job-specific environmental training continued within all of the plants. Training courses addressing air, water, solid waste, coal combustion products management and similar topics were presented to individual work teams according to job responsibilities and the potential for having an effect on environmental performance.</p> <p>New employee environmental training sessions were developed and presented to all new Fossil Operations employees. This is a comprehensive training program that sets the environmental foundation for all subsequent targeted environmental training.</p>
Plant Implementation Teams	<p>Plant-specific environmental teams continued to lead MECA implementation at Valley, Milwaukee County, Oak Creek, and Pleasant Prairie Power Plants.<sup>6</sup> These teams lead the overall implementation of the facility-specific EMS elements, including operational controls, corrective action, monitoring and recordkeeping. These teams provide in-plant leadership in developing facility-specific environmental guidance and serve as an in-plant resource for environmental management.</p>
Objectives and Targets	<p>Plant environmental teams serve as an on-site resource in achieving business unit and plant-specific objectives and targets. Included in the environmental objectives were several items not specifically required by environmental regulations or plant permits. These objectives include:</p> <ul style="list-style-type: none"> <li>• Reviewing and upgrading environmental procedures</li> <li>• Improving staff access to information on plant environmental information and procedures</li> <li>• Continuing the minimization of landfilling of ash (or coal combustion products, CCPs)</li> <li>• Maximizing the beneficial use of CCPs</li> <li>• Improving waste management, recycling and pollution prevention</li> <li>• Improving ash handling operations</li> <li>• Improving coal handling and storage operations</li> <li>• Increasing plant awareness of stormwater and fugitive emissions control.</li> </ul>
Responsibilities Matrix	<p>Plant environmental responsibility matrices were maintained for key day-to-day plant operations. The matrices identify specific responsibilities associated with air quality monitoring, wastewater treatment, solid and hazardous waste, used oil, minor solid waste streams, recordkeeping and several other routine environmentally related plant operations. These matrices are used to support plant environmental training, as well as orientation and reference information for new or transferred employees.</p>

<sup>6</sup> The environmental team at Pleasant Prairie Power Plant was established as a result of the Pleasant Prairie Power Plant Environmental Cooperative Agreement signed in February 2001.



<b>EMS Activity</b>	
Guidance	<p>Staff at the Valley, Oak Creek and Milwaukee County Power Plants maintained plant-specific Solid Waste Guides covering all identified solid waste streams in the plant. The Guides provide information on the proper storage, labeling, disposal and transport of any solid waste streams collected for recycling or disposal. This information is posted at various locations in the plants and is periodically updated to reflect any changes in materials or practices.</p> <p>Inspection and audit guides were also completed for each plant during the reporting period.</p>
Contractor Expectations	<p>As a result of the large air quality control projects occurring, the plants are experiencing a significant increase in the use of contractors to install several major systems at the plants during the next decade, the plant teams have worked to identify how to optimally manage the potential environmental aspects associated with contractor activities. Periodic environmental reviews of contractor environmental performance occur and any deficiencies in performance expectations are brought to closure by the contractor.</p>

## RESEARCH

We Energies continues to support and conduct research on both mercury and greenhouse gases. This research consists of studies conducted at We Energies' facilities, as well as funding collaborative research with the Electric Power Research Institute (EPRI), the U.S. Department of Energy (DOE), and the U.S. Environmental Protection Agency (EPA).

Previous mercury research supported by the company focused on detecting and measuring the various forms of mercury in coal-fueled plant flue gases and the environmental fate of these emissions. Current research is focused on potential mercury emission reduction strategies, including co-control of mercury by existing air pollution control devices and mercury-specific control technologies. We Energies is evaluating both approaches to reducing mercury emissions.

### Co-Control Mercury Removal Technologies

We Energies continues to monitor work being conducted by EPRI and DOE as this team completes measurements at power plants that operate SCR and WFGD (wet flue gas desulfurization) systems. The goal of one such evaluation performed at the Pleasant Prairie Power Plant (P4) was to determine the degree to which the SCR oxidized the elemental mercury present in the flue gases. Results of this study, as well as results published for a WFGD-equipped power plant in Texas during 2005, indicated that power plants burning low sulfur western coal (particularly sub-bituminous coal), the SCR does not convert significant quantities of elemental mercury to either the oxidized or particulate-bound forms of mercury. Consequently, at this time little additional co-control of mercury by wet scrubbers, SCRs, or existing ESP collectors appears likely for plants burning PRB or lignite coals. Preliminary work by researchers at the EERC (Energy and Environmental Research Center) in North Dakota suggests that additives to the coal feed, which may alter mercury speciation, may be feasible.

A new study to evaluate the long term capability of a prototype mercury oxidizing selective catalytic reactor (SCR) catalyst is being undertaken at P4. This work commenced in December, 2005 and will monitor catalyst performance under actual field conditions. This will be accomplished using a small pilot

scale test vessel that has been installed in parallel with the existing Pleasant Prairie Power Plant Unit 2 SCR system, in what is called a slip stream reactor configuration. The prototype catalyst will receive ammoniated flue gas from the full scale SCR system and will accomplish nitrogen oxide (NO<sub>x</sub>) reduction. Due to a proprietary conditioning of the catalyst material, oxidation of elemental mercury present in the flue gas is expected to occur.

Results of this test are important for P4, since upwards of 90 percent of the oxidized mercury could be collected in the WFGD systems being installed at P4, while elemental mercury cannot be collected. Approximately 60-80 percent of the mercury in the flue gas at Pleasant Prairie Power Plant is in the elemental state. A mercury oxidizing catalyst could prove to be a viable alternative to installing a carbon sorbent injection type of mercury removal system at this plant. Such a system would also require an ash and sorbent collection bag house.

### **Environmental Fate of Mercury Emissions**

We Energies continues to support studies sponsored by EPRI and the DOE examining the behavior of mercury in power plant plumes. The results of a previous environmental fate study conducted at P4 have been presented at several conferences during 2004 and 2005 and in briefings for EPA and other research and regulatory groups. The preliminary conclusions are that approximately two-thirds of the oxidized mercury measured within the stack is converted to the elemental form within 10 kilometers of the stack. Recent modeling work conducted by AER, EPA's and EPRI's mercury transport and fate modeling contractor, suggests that current models over-predict mercury wet deposition in the mid-Atlantic state regions partially due to the fact that existing models, including EPA's CMAQ model used for the CAMR Regulatory Analysis work, cannot address the apparent within-plume reduction reactions measured by the EPRI / DOE-funded field studies. Laboratory work on the apparent sulfur-mediated reduction reactions is underway.

### **Mercury-Specific Removal Technologies**

We Energies continues to support EPRI and DOE research that targets the direct removal of mercury from power plant emissions.<sup>7</sup> Four specific projects either have been or are being supported by the company.

**TOXECON** – This full-scale demonstration research project is being performed at We Energies' Presque Isle Power Plant in Marquette, Michigan. To avoid the adverse environmental and economic impact to fly ash created by carbon-based sorbent injection, We Energies is working with DOE, EPRI and vendor companies to design, install, test and operate an innovative mercury removal technology. This is an EPRI patented process that utilizes a fabric filter baghouse in conjunction with sorbent injection downstream of a power plant's electrostatic precipitator (ESP). Construction of the TOXECON unit began in 2004 and was completed in late 2005. At least two years of testing, beginning in early 2006, is envisioned as part of this collaborative project. The results of this full-scale demonstration project are expected to have value for We Energies' Wisconsin power plants, as well as plants owned and operated by other utilities.

**Carbon-Based Sorbent Injection** – In 2001, We Energies' Pleasant Prairie Power Plant participated in a DOE and EPRI funded project to determine the feasibility and effectiveness of carbon-based sorbents that are injected into the plant flue gases upstream of the particulate control devices. P4 was one of four power plants initially examined; however, DOE performed similar tests at six additional plants 2004, with more testing completed in 2005 at plants burning a variety of coals. Researchers have concluded that mercury removal performance is impacted significantly by flue gas chemistry as well as ESP size. In general, the differences are thought to

---

<sup>7</sup> Additional information regarding We Energies' mercury research and reduction strategies is presented in the Wisconsin Energy Corporation 2004 Performance Report at [WEC Performance Report | Environmental Performance](#)

be due to the levels of chlorine present in the flue gases produced by the varied coal types, with the low chlorine-containing PRB and lignite coals exhibiting rather low overall removal at very high carbon injection rates. Most importantly, the testing at P4 revealed that the presence of activated carbon-based sorbent in the fly ash adversely impacted the marketability of this product for beneficial use by the cement and other industries.

**Non-Carbon Based Sorbents** – In an effort to identify alternatives to carbon-based sorbents, We Energies worked with EPRI and DOE to examine non-carbon based sorbents. The goal of this research was to develop sorbents that avoided the potential environmental and economic issues associated with the impact of activated carbon on the marketability of fly ash. Tests were conducted during 2002 and 2003 at the Valley Power Plant and during 2004 at P4 on a small fraction of the actual flue gas utilizing specifically designed equipment that simulates both fabric filter baghouse and ESP operation. The alternative sorbents that showed promise were tested at similarly fueled power plants under near full scale operating conditions. These results were also encouraging in that very high removal rates ( ~90% ) were accomplished over 30-day test periods. However, the sorbents tested were similar to activated carbon in that the resultant sorbent-contaminated fly ash was rendered unfit for use in concrete. Research with other non-carbon based sorbents by EPRI and DOE is continuing.

**Gold Panel Collection** – We Energies previously provided P4 as a host site for EPRI-sponsored research wherein mercury was captured using stationary gold panels mounted within the plant's ESP ductwork. Gold and a limited number of other substances have been demonstrated to capture mercury in small test apparatuses. While the results of this study did not show promise as a primary mercury-specific control device, EPRI has received funding from DOE to test this capture concept as an add-on "polishing device" that could be used downstream of the last pollution control device at a power plant or other mercury source. This work began during 2005 at a power plant in Texas.

### **Greenhouse Gas Research**

We Energies continues to support greenhouse gas (GHG) emissions research, and is working with EPRI and several partners on an initiative to create centers to develop, test and optimize a range of affordable technologies that can capture and sequester carbon dioxide. There are no results available.

## **EMISSIONS**

One of the primary objectives of the MECA was to provide measurable improvements in the level of air emissions from We Energies' coal-fueled power plants. The following section provides summary data for the plants covered by the MECA. Detailed data on individual plant performance are in the Appendix of this report.<sup>8</sup>

### **Generation**

Total electrical generation by the company's plants is a function of economic conditions, customer demand, weather, and the availability of individual units. Gross electric generation by the Wisconsin plants during 2004 was 17,977,552 megawatt hours, or approximately six percent more than in 2003. Overall generation by the Valley, Oak Creek and Pleasant Prairie Power Plants was higher due to less outage time and higher customer demand.

---

<sup>8</sup> The data Appendix begins on page 18. Additional information regarding We Energies' air emissions can be found in the Wisconsin Energy Corporation annual performance report at [Wisconsin Energy Corporation - Air Emissions](#)

### **Sulfur Dioxide Emissions**

Total sulfur dioxide (SO<sub>2</sub>) emissions during 2004 were 65,103 tons, or approximately three percent lower than the previous year. Sulfur dioxide emissions are a function of the sulfur content of the fuel the plants burn, which is primarily coal.

The MECA included a commitment by We Energies to meet specific SO<sub>2</sub> targets of 0.70 and 0.45 lb/MBtu within five and ten years of the date of the agreement, respectively. During 2004, the average rate for the Wisconsin plants covered by the agreement was 0.665 lb/MBtu, and therefore below the five-year voluntary target level set in the MECA. This level represented an approximate eight percent decrease from 2003, and a 13 percent decrease from the MECA 2002 baseline year. Similar reductions are illustrated by the pounds emitted per megawatt hour of electricity generated.

We Energies continued work on the \$320 million project initiated in May 2004 to install two flue gas desulfurization (FGD) systems (as well as a second selective catalytic reduction unit) at the Pleasant Prairie Power Plant. The first FGD system is scheduled for operation beginning in late 2006 on Unit 1, and the second system on Unit 2 in 2007. These units will reduce SO<sub>2</sub> emissions significantly from that plant, and also will be reflected in system wide rates.

### **Nitrogen Oxide Emissions**

Boiler and combustion control improvements performed at several of the plants have the objective of reducing NOx emissions. Low NOx burners have been installed and are operated at both Valley Power Plant and Units 7 and 8 at Oak Creek Power Plant. Previously installed computerized neural networks to better control the boiler combustion process continue to be refined at these same plants. The computerized neural net systems seek to optimize all of the primary boiler parameters, with one of the goals being to reduce the rate of NOx emissions.

The first selective catalytic reduction unit (SCR) that was installed on Unit 2 at P4 during 2002 was operational during the 2003 summer ozone season and throughout the year in 2004 and 2005. This \$80 million investment was installed to specifically reduce NOx emissions. The company continues to monitor the performance of the SCR catalyst to determine if there are changes in the NOx removal efficiency over time, as well as the potential effect this system has on the marketability and subsequent beneficial use of the coal combustion products (e.g., fly and bottom ash) produced by the plant. A second SCR system is under construction on Unit 1 at P4 and is scheduled to enter operation during the fourth quarter of 2006.

The MECA included a commitment by We Energies to meet specific NOx targets of 0.25 and 0.15 lb/MBtu within five and ten years of the date of the agreement, respectively. During 2004, the Wisconsin system-wide NOx emissions were 22,466 tons, or approximately 15 percent lower than in 2003, and the NOx rate was 0.229 lb/MBtu. This represents an emission rate reduction of approximately 27 percent from the 2002 baseline year for the MECA. Total seasonal NOx emissions during 2004 were 9,060 tons and the emission rate was 0.22 lb/MBtu.

### **Carbon Dioxide Emissions**

The quantity of net greenhouse gas (GHG) emissions from We Energies' facilities is related directly to the amount of time that our fossil-fueled generating units are operating, types of fuel burned, and individual plant capacity factors. Operation of these units is influenced primarily by the availability of our non-emitting Point Beach Nuclear Plant and renewable energy sources, and by our customers' demand for electricity. The latter is affected significantly by both the economy and the weather. During 2004, total CO<sub>2</sub> emissions from We Energies' Wisconsin plants were 20,041,805 tons, or approximately six percent higher due to increased energy demand by our customers. The carbon dioxide emission rate was 204.7 lb/MBtu, essentially the same as 2003.

We Energies' emissions in future years will continue to be influenced by these factors, as well as several actions planned or underway. These actions include:

- Repowering Port Washington Power Plant with natural gas combined cycle turbine unit.
- Increasing our investment in energy efficiency and conservation.
- Expanding the company's renewable generation to five percent of the company's energy sales by 2011. The company is committed to adding 200 MW of wind generation.
- Adding coal-fueled units using state-of-the-art technology as part of the Oak Creek expansion.

Since the early 1990's the company has taken several voluntary actions that have resulted in GHG reductions. These have included the following projects which continue to be implemented.

- **Renewable Energy** – We Energies generates or purchases more than 1.2 million megawatt hours of renewable energy. During the period of 1999 through 2004 this resulted in the reduction of total GHG emission by approximately 3.4 million tons.
- **PowerTree Carbon Company** – This is a domestic forestry carbon sequestration project involving several utilities that operate fossil fuel facilities.
- **UtiliTree Carbon Company** – This is a nonprofit company owned by several domestic companies and managed by the Edison Electric Institute. There are ten UtiliTree projects, including the Rio Bravo Carbon Sequestration Project in Belize, of which We Energies is a partner.
- **Demand Side Management** – Reduction in the use of energy by We Energies' customers reduces the generation of electricity using fossil fuels.
- **Vehicle Fuel Conversion** – The promotes the use of natural gas vehicles by its employees and customers, including making CNG (compressed natural gas) fueling stations available in its service area.
- **Beneficial Use of Ash** – Beneficial use of ash in concrete applications offsets portland cement production, which is a carbon dioxide emission source.

### **Estimated Mercury Air Emissions**

During 2004, We Energies' Wisconsin plants emitted an estimated 1,183 pounds of mercury into the atmosphere, or approximately 10 percent higher than estimated in 2003. This reflects the increased demand for electricity, and hence power generation, during the year, as well as changes in the mercury levels present in the sources of coal used by the company. Utilization of 100 percent low sulfur coal from the Powder River Basin in Wyoming at the Oak Creek Power Plant has decreased sulfur dioxide emissions, but has resulted in higher mercury emission rates at this plant.

As described above (see *Research*), the company is investing significant effort to support the development and testing of various mercury emission reduction technologies. The company is committed to a significant overall reduction in mercury emissions from the plants within the MECA. This includes a ten percent voluntary reduction target by 2008, and a fifty percent voluntary reduction target by 2013.<sup>9</sup> The TOXECON project described above will also support a system-wide reduction in mercury emissions.

---

<sup>9</sup> Section IX, Commitment to Continuing Voluntary Improvement, of the MECA outlines We Energies voluntary mercury reduction commitments below a baseline level.

## **WISCONSIN VOLUNTARY EMISSION REDUCTIONS REGISTRY**

We Energies has annually reported its GHG emissions and reduction activities as part of the U.S. Department of Energy's (DOE) Climate Challenge Program. The company continues to file annual reports to the DOE, reporting GHG emission reductions of over 40 million tons of CO<sub>2</sub> equivalents during the period from 1995 through 2004.

The company supported the DNR's development of a voluntary emission reduction registry to register GHG and other air emission reductions that are made prior to being required by regulation or legislation. We Energies has submitted GHG emission reductions into the registry for the period 1999-2004.

We Energies joined the EPA's Climate Leaders Initiative in September 2002 and established a greenhouse gas emissions inventory under this voluntary program. The company also participates in the activities of the Pew Center on Global Climate Change's Business Environmental Leadership Council (BELC). The mission of this latter group is to provide credible information and innovative solutions in the effort to address climate change.

## **REGULATORY FLEXIBILITY**

Section XI of the MECA provides a mechanism for We Energies and the DNR to exercise certain operational flexibility and streamlining in recognition of emission reductions and other commitments of the agreement.

### **Permit Streamlining**

We Energies has utilized this provision in prior years at the Pleasant Prairie Power Plant.<sup>10</sup> This provision was not used during 2004 or 2005 at the plants.

### **Streamlined Reporting**

The MECA contains provisions for We Energies to submit quarterly excess emission and Title V semi-annual and annual reports to the DNR and EPA electronically within 45 days after the end of each reporting period. To date this flexibility has not been exercised because the EPA has not developed the final rule outlining procedures for authenticating electronic signatures. A proposed procedure circulated in late 2005 may provide the opportunity for the use of this provision in the future.

## **OUTREACH AND STAKEHOLDER PARTICIPATION**

We Energies committed to inform and work with interested stakeholders as part of the MECA. This was a continuation of the involvement of state and national groups that were consulted prior to finalizing the agreement in 2002. In addition to national and statewide organizations, We Energies continues outreach activities with existing stakeholders, and solicits input from potentially interested parties near each plant.

Continued active participation by both community and regional stakeholders continues to be challenging, and feedback from these parties has been minimal at best, and in some instances nonexistent. At two information meetings and tours at one facility during the fourth quarter of 2005, only three members of

---

<sup>10</sup> The construction permit streamlining is also provided to the Pleasant Prairie Power Plant under the provisions of the environmental cooperative agreement signed by We Energies and the DNR in February 2001.

the community participated in the first meeting, and none in the second. This was in response to approximately 70 invitations to local and statewide stakeholders.

The lack of active participation by stakeholders may be a function of competing time obligations (e.g., personal or professional issues), as well as the fact that the MECA has the objective of improved environmental performance. As demonstrated by this report, the potential effect of the plants on the environment continues to be reduced.

### **Pleasant Prairie Power Plant**

We Energies signed Wisconsin's first Environmental Cooperative Agreement for the Pleasant Prairie Power Plant (P4) in February 2001. Development and implementation of that agreement initially heightened the plant's interaction with interested neighbors, regional environmental groups, surrounding businesses, and elected and appointed governmental officials. However, the level of stakeholder participation has decreased since 2001, even in the midst of the \$320 million construction project involving the installation of the FGD systems to reduce sulfur dioxide emissions and second SCR to reduce nitrogen oxide emissions. To provide information and to stimulate feedback, P4 staff continue several outreach actions, including:

- Periodic mailings, including plant environmental newsletters
- Plant information sessions and tours, including an open house, information meeting in April 2004 focusing on the Air Quality Control System project mentioned above. The most recent information sessions and tours were offered in November 2005.
- Outreach to targeted community, governmental and professional groups. Several of these have resulted in subsequent tours by school groups, colleges, scouts and other groups.

The plant was also a host site for the Wisconsin Green & Growing tour event sponsored by the Lafollette Institute and the Wisconsin Environmental Initiative in October 2005. This event focused on Wisconsin's facilities demonstrating superior environmental performance and economic results.<sup>11</sup>

We Energies was requested by the U.S. Environmental Protection Agency to be a host facility for new employee training. Approximately 20 new agency employees participated in a training session and plant tour in November 2005. Regional DNR staff also participated.

### **Port Washington Power Plant**

We Energies is currently repowering the Port Washington Power Plant (PWPP) with two 545-megawatt natural gas units to replace the former coal-fueled units. The last of the original PWPP coal fueled units was permanently shut down on September 17, 2004 and the formerly used equipment has been removed. Construction began on the first unit during the summer 2003, while construction of the second unit will be initiated in 2006. Full commercial operation of the new Power Washington Generating Station (PWGS) is scheduled for 2008.

The company continues to work closely with neighbors, members of the community, elected officials and other interested parties in identifying and addressing potential environmental issues and concerns during both demolition and construction. We Energies community relations representatives and plant staff continue to inform neighbors, the media, and potentially affected members of the community of construction related issues, including construction work hours, changes in construction staffing levels, and site traffic. The company also provides a community hotline that community stakeholders can call if

---

<sup>11</sup> Additional information regarding the October, 2005 Wisconsin Green & Growing tour and event can be found at [Wisconsin Green & Growing](#).

they have questions about the Port Washington project. This enhanced interaction with the community will continue to occur throughout the construction period.

### **Oak Creek Power Plant**

The company received approval from the Public Service Commission of Wisconsin to construct two 615 MW coal-fueled generating units adjacent to the existing Oak Creek Power Plant (OCPP), and construction was initiated in 2005.

As part of the public review and approval process of the planned Elm Road Generating Station, We Energies has worked with numerous individuals and groups that have identified themselves as interested stakeholders in both the existing and planned facilities at this site. In addition to formal public hearings and meetings sponsored by others, We Energies has sponsored targeted outreach to key sectors starting in November 2002 and continuing through 2005.

- **Informal Public Meetings** – Meetings continue to be conducted for local citizen groups in the neighborhoods surrounding the new plant. During 2004 and 2005 these meetings included focused events with Caledonia residents, neighbors, senior citizens and local employees. These meetings seek to answer questions and address specific community concerns. All of the individuals involved were notified by invitation of each meeting.
- **Business and Professional Briefings** – Company representatives continue briefings with local business and professional groups in the Oak Creek area that have expressed an interest for additional information from We Energies.
- **Door-to-Door Contacts** – Over 1600 local households have been contacted by We Energies’ representatives since the project was announced to provide information and answer questions.
- **Local Government Meetings** – Meetings continue to be conducted with local, county and state officials to provide information and respond to questions.
- **Speakers’ Bureau** – We Energies’ Speaker’s Bureau has continued to make presentations to organizations that have requested additional information on the company’s plan. Local organizations that have been provided speakers during the reporting period include Rotary, chambers of commerce and various other community and educational organizations.
- **Web Site** – Wisconsin Energy Corporation maintains a web site containing key information about the project.<sup>12</sup>

Because of the continuing level of interest in We Energies’ actions in the area, stakeholder involvement similar to that outlined above will continue with interested parties near the Oak Creek Power Plant.

### **Valley and Milwaukee County Power Plants**

We Energies continues involvement with several local stakeholders near the Valley and Milwaukee County Power Plants. Much of this has focused on the brownfield redevelopment in the Menomonee River Valley surrounding the Valley Power Plant. Consequently, outreach to potential interested community stakeholders has included the Menomonee Valley Business Association, the Menomonee Valley Partners, Sixteenth Street Community Health Center (SSCHC) and local businesses.

---

<sup>12</sup> Additional information regarding the Oak Creek plant expansion can be found at [PTF We Energies Projects](#).



The Valley Power Plant have also expanded their outreach to educational institutions, sponsoring tours and information sessions to groups including:

- Milwaukee Area Technical College
- Milwaukee School of Engineering
- Cardinal Stritch University
- Muhammad School
- El Puente High School
- Upward Bound Program.

We Energies representatives also continue to meet with representatives surrounding the Milwaukee County Power Plant. These stakeholders are primarily associated with the Milwaukee Medical Center and county grounds complex, and include Froehdert Hospital, Children's Hospital, Medical College of Wisconsin, Milwaukee County, and others.

### **Combustion Turbine Plants**

There has been no expressed interest by neighbors, community or other stakeholder groups in meetings or information sessions. Tours are typically not provided to these facilities that generally are not staffed and operate on only an occasional basis.

## **ADMINISTRATIVE SAVINGS**

Measurable administrative savings were one goal of the MECA. The primary source of these savings is flexibility in monitoring and reporting. During the reporting period We Energies continued to utilize one provision of the administrative flexibility provided by the MECA.

The company's combustion turbines were on a schedule to calibrate their water and fuel flow metering systems annually. They now are on biennial schedule. This means the water and fuel oil flow meters do not have to be removed from service and sent out for calibration. The savings in work time is two hours per system. There are nine water and nine fuel oil metering systems between the three stations. These eighteen systems mean a savings of 36 staff hours or roughly \$2,160 (\$60 per man-hour). The contractor savings is estimated to be approximately \$10,000. This also reduces the length of outage time when the plants are not available to serve We Energies' customers.

The company did not utilize the permit streamlining provisions of the Agreement during the reporting period.

---

## DATA APPENDIX

### Gross Generation<sup>13</sup>

Plant	Generation (Gross MWH)		
	2002	2003	2004
OCP	5,782,066	6,351,851	7,198,088
PP	8,469,446	8,524,651	8,825,196
PW	818,149	730,538	593,942
V	1,252,074	1,231,043	1,259,786
M	29,258	29,716	26,909
C	38,158	28,127	19,419
G	41,338	30,023	23,084
P	79,011	61,953	31,128
<b>TOTAL</b>	<b>16,509,500</b>	<b>16,987,902</b>	<b>17,977,552</b>

### Sulfur Dioxide Emissions<sup>14</sup>

Plant	Emissions (tons)		
	2002	2003	2004
OCP	12,868	13,294	15,765
PP	33,446	33,585	33,708
PW	9,804	9,062	7,689
V	14,686	10,402	7,334
M	856	934	602
C	0	1	1
G	2	3	3
P	3	1	0
<b>TOTAL</b>	<b>71,664</b>	<b>67,282</b>	<b>65,103</b>

Plant	Emissions (lb/MBtu)		
	2002	2003	2004
OCP	0.401	0.405	0.430
PP	0.731	0.742	0.713
PW	1.904	1.953	1.930
V	1.695	1.210	0.836
M	1.187	1.290	0.879
C	0.001	0.003	0.008
G	0.007	0.017	0.018
P	0.005	0.001	0.000
<b>AVE.</b>	<b>0.767</b>	<b>0.724</b>	<b>0.665</b>

<sup>13</sup> All data is based on gross generation representing the total amount of electrical power generated by each individual plant.

<sup>14</sup> Heat input, sulfur dioxide, nitrogen oxide and carbon dioxide emissions data are based on continuous emission monitor (CEM) data for Oak Creek, Pleasant Prairie, Port Washington and Valley Power Plants, Concord and Paris Generating Stations, and Germantown Power Plant Unit 5. Emissions data for Milwaukee County Power Plant and Germantown Power Plant Units 1-4 are based on the amount of fuel combusted.

Plant	Emission Rate (lb/Gross MWHr)		
	2002	2003	2004
OCPP	4.451	4.186	4.380
PPPP	7.898	7.880	7.639
PWPP	23.966	24.809	25.892
VAPP	23.458	16.900	11.644
MCP	58.496	62.876	44.727
CCGS	0.012	0.050	0.124
GTP	0.091	0.220	0.242
PSGS	0.071	0.019	0.000
<b>TOTAL</b>	<b>8.682</b>	<b>7.921</b>	<b>7.243</b>

### Nitrogen Oxide Emissions

Plant	Emissions (tons)		
	2002	2003	2004
OCPP	6,536	5,014	5,468
PPPP	21,487	16,469	12,135
PWPP	1,731	1,437	1,247
VAPP	3,281	3,091	3,243
MCP	291	291	291
CCGS	21.9	16.9	15.5
GTP	39.3	55.6	49.8
PSGS	59.5	36.1	17.7
<b>TOTAL</b>	<b>33,446</b>	<b>26,410</b>	<b>22,466</b>

Plant	Emissions (lb/MBtu)		
	2002	2003	2004
OCPP	0.204	0.153	0.149
PPPP	0.470	0.364	0.257
PWPP	0.336	0.310	0.313
VAPP	0.379	0.359	0.370
MCP	0.404	0.402	0.425
CCGS	0.076	0.080	0.104
GTP	0.148	0.283	0.330
PSGS	0.111	0.086	0.085
<b>AVE.</b>	<b>0.358</b>	<b>0.284</b>	<b>0.229</b>

Plant	Emission Rate (lb/Gross MWH)		
	2002	2003	2004
OCPP	2.261	1.579	1.519
PPPP	5.074	3.864	2.750
PWPP	4.231	3.934	4.198
VAPP	5.241	5.021	5.148
MCP	19.898	19.593	21.632
CCGS	1.148	1.202	1.596
GTP	1.901	3.706	4.312
PSGS	1.506	1.165	1.137
<b>AVE.</b>	<b>4.052</b>	<b>3.109</b>	<b>2.449</b>

## Seasonal Nitrogen Oxide Emissions

Plant	Seasonal Emissions (tons)		
	2002	2003	2004
OCP	3,605	1,974	2,381
PP	10,255	4,561	4,467
PW	929	784	742
V	1,321	1,195	1,289
M	130	127	129
C	15.9	8.4	814
G	22.8	23.3	25.3
P	46.3	24.0	13
<b>TOTAL</b>	<b>16,325</b>	<b>8,696</b>	<b>9,060</b>

Plant	Seasonal Emissions (lb/MBtu)		
	2002	2003	2004
OCP	0.218	0.147	0.152
PP	0.483	0.239	0.238
PW	0.333	0.307	0.313
V	0.380	0.352	0.382
M	0.401	0.396	0.437
C	0.079	0.083	0.073
G	0.143	0.264	0.366
P	0.115	0.084	0.084
<b>AVE.</b>	<b>0.362</b>	<b>0.222</b>	<b>0.221</b>

Plant	Seasonal Emission Rate (lb/Gross MWH)		
	2002	2003	2004
OCP	2.341	1.517	1.570
PP	5.261	2.536	2.555
PW	4.123	3.966	4.191
V	4.916	4.576	5.034
M	21.443	20.476	23.325
C	1.192	1.236	1.766
G	1.845	3.536	3.232
P	1.544	1.133	1.114
<b>AVE.</b>	<b>4.035</b>	<b>2.416</b>	<b>2.426</b>

## Carbon Dioxide

Plant	Emissions (tons)		
	2002	2003	2004
OCP	6,588,934	6,741,673	7,530,019
PP	9,387,218	9,287,883	9,697,343
PW	1,057,003	952,287	817,717
V	1,777,957	1,764,749	1,800,551
M	130,727	131,176	132,026
C	34,318	25,609	18,622
G	33,543	26,830	20,732
P	65,930	49,966	24,795
<b>TOTAL</b>	<b>19,075,630</b>	<b>18,980,172</b>	<b>20,041,803</b>

Plant	Emissions (lb/MBtu)		
	2002	2003	2004
OCP	205.2	205.2	205.2
PP	205.2	205.2	205.2
PW	205.2	205.2	205.2
V	205.2	205.2	205.2
M	181.4	181.1	192.9
C	119.1	121.0	124.8
G	126.2	136.6	137.4
P	123.0	119.5	118.9
<b>AVE.</b>	<b>204.1</b>	<b>204.3</b>	<b>204.7</b>

Plant	Emission Rate (lb/Gross MWH)		
	2002	2003	2004
OCP	2279.1	2122.7	2092.2
PP	2216.7	2179.1	2197.6
PW	2583.9	2607.1	2753.5
V	2840.0	2867.1	2858.5
M	8936.1	8828.7	9812.8
C	1798.8	1820.9	1917.9
G	1622.9	1787.3	1796.2
P	1668.9	1613.0	1593.1
<b>AVE.</b>	<b>2310.9</b>	<b>2234.6</b>	<b>2229.6</b>

## Estimated Mercury Emissions<sup>15</sup>

Plant	Estimated Emissions (lb)		
	2002	2003	2004
OCPP	184.8	226.6	382.5
PPPP	838.4	762.1	743.0
PWPP	43.2	38.5	30.3
VAPP	55.0	39.8	25.1
MCPP	2.0	3.4	2.5
CCGS	-	-	-
GTPP	-	-	-
PSGS	-	-	-
<b>TOTAL</b>	<b>1,123</b>	<b>1,070.4</b>	<b>1,183.3</b>

Plant	Estimated Emission Rate (lb/Gross MWH)		
	2002	2003	2004
OCPP	0.00003196	0.00003567	0.00005315
PPPP	0.00009899	0.00008940	0.00008419
PWPP	0.00005279	0.00005276	0.00005096
VAPP	0.00004392	0.00003232	0.00001990
MCPP	0.00006835	0.00001145	0.00009143
CCGS	-	-	-
GTPP	-	-	-
PSGS	-	-	-
<b>AVE.</b>	<b>0.00006804</b>	<b>0.00006301</b>	<b>0.00006582</b>

## Legend

OCPP	Oak Creek Power Plant
PPPP	Pleasant Prairie Power Plant
PWPP	Port Washington Power Plant
VAPP	Valley Power Plant
MCPP	Milwaukee County Power Plant
CCGS	Concord Generating Station
GTPP	Germantown Power Plant
PSGS	Paris Generating Station

<sup>15</sup> Estimated mercury emissions are based on the amount of fuel burned in coal-fueled plants.